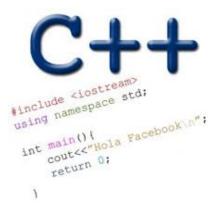
FUNCTIONS, LOOPS

Problem Solving with Computers-I





Pass by value

```
#include <iostream>
using namespace std;
                               What is printed by this
void bar(int x){
      x = x + 5;
                               code?
                               A. 0
int main(){
                               B. 5
   int y = 0
                               C. Something else
   bar(y);
   cout<<y;
   return 0;
```

The accumulator pattern

Write a function that takes a parameter n and prints the sum of the series:

Write another function that returns the sum of the series

Formatting output to terminal

```
See pages 91 and 190 of textbook
int i = 10;
double j = 1/static cast<double>(i);
cout.setf(ios::showpoint); //Show the decimal point
cout.precision(3);
cout<<j;
What is printed by the above code?
A \cap
B. 0.1
C. 0.10
D. 0.100
E. None of the above
```

Nested for loops – ASCII art!

Write a function that prints a square of a given width

```
drawSquare(5);

* * * * * *

* * * * *

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```

Draw a triangle

Which line of the drawSquare code (show on the right) would you modify to draw a right angled triangle

```
drawTriangle(5);

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```

```
6
    for(int i = 0; i < n; i++){ //A
        for(int j=0; j < n; j++){ //B
          cout<<"* ": //C
9
        cout<<endl;
12
     cout<<endl;
13
```

Infinite loops

```
for (int y=0; y<10; y--)
    cout<<"Print forever\n";</pre>
int y=0;
for(;;y++)
    cout<<"Print forever\n";</pre>
int y=0;
for(;y<10;);
    y++;
int y=0;
while (y<10)
    cout<<"Print forever\n";</pre>
int y=0;
while (y=2)
    y++;
```

PROGRAM I/O

• What are two ways for a user to provide input to a C++ program

Passing arguments to main (via the command line)

- We can pass information into a C++ program through the command line when executing the program.
- The main function will need to have the following:

```
int main(int argc, char* argv[])
```

- `int argc` is the number of "arguments" the program has, including the executable name.
- `char* argv[]` is the "list" of arguments passed into the program.
 - argv[0]: name of the program
 - argv[1]: 1st argument, remember this is a C-string
 - Use atoi to convert a C-string to a number atoi(argv[1])

Next time

- Automating the compilation process with Makefiles
- Intro to lab02